

Listing of Claims:

This listing of claims reflects all claim amendments and replaces all prior versions, and listings, of claims in the application. Material to be inserted is underlined, and material to be deleted is in ~~strikeout~~.

1–25. (Canceled)

26. (Currently amended) A system for performing a multiplexed experiment comprising

a set of particles each having comprising a light polarizing material; properties in accordance with an optically detectable code pattern, the code patterns of at least two of the particles being distinct; and a substrate; wherein the light polarizing material is distributed on a portion of a substrate surface or embedded within a portion of a substrate surface; and

two or more distinct samples and/or reagents connected to the particles in correspondence with the distinct codes code patterns, so that the set of particles can be analyzed in the same multiplexed experiment by identifying samples and/or reagents according to the codes code patterns of the respective particles to which the samples and/or reagents are connected.

27. (Currently amended) The system of claim 26, wherein each particle includes a substrate and at least one layer of a material with light polarizing capability disposed on the substrate, and wherein a part of the substrate is cleared of the at least one layer of light polarizing material in accordance with a code pattern.

28. (Currently amended) The system of claim 27, wherein each code pattern is configured to be recognized in a wavelength range of light, and wherein the substrate has low absorption in the wavelength range

29. (Previously presented) The system of claim 27, wherein the at least one layer of material has linear light polarization capability in the wavelength range of light and low absorption of light in other wavelength ranges.

30. (Previously presented) The system of claim 27, wherein each particle includes at least one cladding layer over the at least one layer of material.

31. (Currently amended) The system of claim 30, wherein the substrate has a thickness of about 0.01 to 1 mm, wherein the at least one layer of light polarizing material has a thickness of about 0.1-100 microns, and wherein the at least one cladding layer has a thickness of about 1-300 microns.

32. (Previously presented) The system of claim 27, wherein the at least one layer of material includes a first layer and a second layer of material each having light polarizing capability.

33. (Currently amended) The system of claim 32, wherein each of the first and second layers of light polarizing material defines a respective polarizing plane, and wherein the respective polarizing planes are substantially perpendicular to one another.

34. (Currently amended) The system of claim 32, wherein a portion of the substrate is cleared of the second layer of light polarizing material.

35. (Previously presented) The system of claim 34, wherein each of the first and second layers of material defines a respective pattern, and wherein the respective patterns substantially coincide.

36. (Previously presented) The system of claim 32, wherein each particle includes respective first and second cladding layers disposed over the respective first and second layers of material.

37. (Previously presented) The system of claim 26, wherein the particles are connected to distinct populations of biological cells such that distinct code patterns correspond with distinct cell populations.

38–43. (Canceled)

44. (New) The system of claim 32, wherein each of the first and second layers of light polarizing material defines a respective polarizing plane, and wherein the respective polarizing planes are substantially parallel to one another.

45. (New) The system of claim 26, wherein the particle further comprises an assay portion for performing an assay.

46. (New) The system of claim 45, wherein the assay portion is spatially segregated from the detectable code.

47. (New) The system of claim 45, wherein the assay portion overlaps with the detectable code.